

H.J. Muller Balancing chro- A rather extreme scute allol, found by Sinit'skaya in March 1934, analyzed genetically by Muller and cytologically by Prokofyeva, includes a long inversion having its left break close to the right of scuta and right break in inert region, and also a small inversion, somewhat smaller than delta 49, and having the positions of both its breaks included within the positions of the two breaks of the latter. No crossovers were found between  $sc^{sl}$  and normal chromosomes in a count of 700. Homozygous  $sc^{sl}$  females are sterile and have rather low viability; males are fertile and with fair viability. This therefore provides a very convenient balancing chromosome for many sex-linked genes, etc.

H.H. Plough Crossing over At the meeting of the Genetics Society at Woods Hole in August 1934, I reported finding 6 cases of crossing over in chromosome 3 following exposure of 5 day old larvae to  $36.5^{\circ}$  for 18 hours. Although it was unknown to me at the time, Shull and Whittinghill had reported in July 1934 (Science 80:103-4) 77 cases in the same chromosome, of which 32 were all of the same type and derived from a single male. While neither investigation is complete it is of interest to summarize these two series of tests up to this point.

Crossovers in Males heterozygous for genes in Chromosome 3.

Shull and Whittinghill	th	st	61	cu	8	es	.8	ca
Plough		st		5	sr	cs	0	4 ca

My results do not show correspondence with those of Shull and Whittinghill in the ratio of crossovers in the st-cu-sr region and this fact suggests perhaps that their irregular group of 32 may need to be reinterpreted. In any case the distribution of the whole series indicates that crossing over in the male may take place in any region of chromosome 3 following exposure to heat.

N.W. Timofeev-Ressovsky Ecological and physiological experiments with different *Drosophila*-species are of importance in connection with the genetic analysis of evolutionary and zoogeographical problems. A good method of testing "adaptations" is the determination of the "relative viability" of different mutants and biotypes under different environmental conditions (see my paper in Z. Ind. Abst. Vererb., 66:319-344, 1933). Some difficulties arise when geographically different normal populations of a species should be compared in respect to their "relative viabilities", since they can not be distinguished phenotypically, and hence the methods of backcrosses or of counting flies in overcrowded bottles containing equal numbers of eggs of the two types to be compared can not be used. In these cases another simple method can be applied. Different populations of one species can be compared, in

respect to their "relative viabilities" under certain conditions, with a pure-bred, standard stock of another species, using the method of overcrowded bottles with equal numbers of eggs of the two types (see my paper in Arch.f.Naturgesch., 2: 285-290, 1933). This method was applied in studying the "relative viabilities" of geographically different populations of *Drosophila melanogaster* and *Drosophila funebris* under different environmental conditions (food, moisture, temperature), using a standard inbred melanogaster-stock for testing different funebris-populations, and a standard inbred funebris-stock for testing different melangoaster-populations. In small culture-vials with food (yielding normally about 100-120 flies) were put 150 (or 200) eggs of the standard stocks of one of the species and the same number of eggs of the population of the other species to be tested; the number of hatching flies of each species were counted, and the tests were repeated until large enough numbers of flies were obtained. The different populations of one species could so be compared inter se, using as a scale their differences from the same standard stock of the other species. These experiments are not yet completed; but the results already obtained show that many of the geographically different wild population, although morphologically indistinguishable, can show remarkable hereditary differences in their physiological properties, a part of these differences being clearly of the type of ecological adaptations. At the same time, experiments of Muller and of myself showed that mutations producing only slight deviations from the "normal relative viability" are produced by x-rays at a rate about twice as high as that of the lethals (Muller's paper read at the 4. Intern. Radiol. Congress and my paper in Strahlentherapie, v.51). Such "slight physiological mutations" are probably also the most common type of spontaneous mutation. These mutations are probably used by natural selection in order to differentiate the species into biotypes and races, adapted to different geographical environments.

#### Technical Notes

Margaret E. Hoover  
Transportation of  
*Drosophila* cultures

For mailing *Drosophila*, we have been using 7 x 2cm. shell vials. The vials contain a small amount of the usual corn-meal-agar prepared food, inoculated with yeast, and a strip of paper is inserted to prevent the food from running onto the sides of the vial. From one to seven vials will easily fit into corrugated paper boxes (8 1/2 x 6 3/4 x 6 3/4cm) If the vials are wrapped in paper and tightly packed on all sides by cotton, there is no danger of breakage. We have found this to be a very satisfactory method for transporting stocks. Both *Drosophila melanogaster* and *virilis* cultures have been satisfactorily shipped as far as Japan. The mailing costs are low. The packages may be sent third class in the United States and as small packets or samples to foreign countries. A full package will usually not weigh in excess of six ounces.

J.C. Li Isolation of  
larvae

In the Yenching Laboratory we have developed a technic by which not only eggs but also larvae of *D. melanogaster* can be isolated within one hour of their hatching. It is essentially the same technic developed by Li (see Li '27 appendix p.55-57). The